ABSTRACT OF THE DISCLOSURE

A motion-compensated video encoding scheme employs progressive fine-granularity layered coding to encode macroblocks of video data into frames having multiple layers, including a base layer of comparatively low quality video and multiple enhancement layers of increasingly higher quality video. Some of the enhancement layers in a current frame are predicted from different quality layers in reference frames. The video encoding scheme estimates drifting errors during the encoding and chooses a coding mode for each macroblock in the enhancement layer to maximize high coding efficiency while minimizing drifting errors.